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Abstract

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Project Title: DETECTING ASPIRATION ASSOCIATED WITH TUBE FEEDINGS

Abstract: *The ultimate goal of the proposed study is to increase the safety of mechanically ventilated tube-fed patients. Because these patients are at high risk for frequent micro-aspirations of regurgitated gastric contents, they are prone to potentially life-threatening nosocomial pneumonia. Efforts are made in practice settings to detect these events early so that interventions can be initiated to prevent morbidity and mortality. However, nurses are often unsure about how to accomplish this because protocols for detection are not well defined; further, there are questions about the sensitivity and specificity for currently used methods. The overall major aim of the proposed work is to determine the accuracy of these currently used methods (observing tracheal secretions for dye added to the tube-feeding formula, and testing for glucose in tracheal secretions to determine if glucose-rich formula is present) and a potential new test which consists of assaying for pepsin in tracheal secretions. The study will require 240 experimental rabbits who will intubated and mechanically ventilated prior to have a mixture of human gastric juice and dye-stained enteral formula slowly instilled into their tracheas. The five independent variables are: two concentrations of dye (0.8 ml/L and 1.5 ml/L), three concentrations of glucose in the enteral formulas (low, moderate, and high), two volumes of the fluid instilled (0.2 ml/kg/hr and 0.33 ml/kg/hr), presence or absence of prior mild lung injury, and time of observation (2, 4 and 6 hours). Observations will be made on suctioned tracheal secretions every 2 hours over a 6-hour period and dependent variables will consist of: visibility of dye, concentration of glucose, and concentration of pepsin in the secretions. Twenty control animals with have normal saline intratracheally instilled. A secondary aim of the study is to determine in rabbits with healthy lungs whether three other dependent variables (peak airway pressures, mixed to determine in rabbits with healthy lungs whether three other*

dependent variables (peak airway pressures, mixed venous admixture readings, and neutrophil counts in post mortem pulmonary lavage fluid) are affected by an additional independent variable (use or non-use of gastric acid inhibiting agents by the 240 acutely ill humans who will provide the gastric juice for tracheal instillation in the rabbits). Following completion of the study, the animals will be euthanized and their lungs lavaged for neutrophil counts. Data will primarily be analyzed by repeated measures analyses of covariance (ANCOVAs) and main-effect F tests. While direct extrapolation of results from animals to humans is not possible, results from this study will provide information that will help nurses develop protocols for use in clinical settings to more effectively monitor for aspiration in mechanically ventilated tube-fed patients.

Thesaurus Terms:
diagnosis quality /standard, early diagnosis, iatrogenic disease, medical complication, method development, tube feeding
animal morbidity, animal mortality, biological model, human morbidity, human mortality, pulmonary respiration, respirator
human tissue, immunologic assay /test, laboratory rabbit, reagent /indicator

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